REMARKS

Claims 1-16, 37-66, 85-90, and 99-101 are pending, with claims 1-16, 51-66, and 99-101 rejected, and claims 37-50 and 85-90 withdrawn from consideration.

Claims 1-16 and 51-66, along with newly added claims 99-101, remain rejected under 35 U.S.C. § 102(e) as being anticipated by Sharrit et al. (U.S. Patent No. 5,999,990; hereinafter "Sharrit"). Applicant respectfully traverses this rejection.

Amended independent claim 1 recites "In a processor having a plurality of kernel planes with a plurality of kernels for processing data in a communication device, at least one kernel of the plurality of kernels comprising: ... a local controller ... permitting the at least one kernel to operate autonomously." Thus claim 1 requires distributed control. The at least one kernel operates autonomously, not only with respect to other kernels, but also with respect to all other circuitry.

In contrast, Sharrit is directed to a communicator 10, which includes a centralized controller 16 that configures a plurality of reconfigurable resource units (RRUs) 12. The RRUs 12 do not operate autonomously, but are instead controlled by controller 16. Sharrit thus has centralized control in its controller 16, as opposed to the claimed distributed control.

More specifically, as illustrated in Fig. 3 of Sharrit, an RRU 54 can include a general purpose processor (GPP) 48 and a field programmable gate array (FPGA) 50. To configure the FPGA 50, the GPP 48 delivers a configuration file to an input of the FPGA 50. The GPP 48 is coupled to the controller 16 for receiving instructions on how to process a signal on bus 14. In response to the instructions, the GPP 48 delivers a control signal to FPGA 50 instructing it to read the signal on signal bus 14 and to process the signal in an appropriate area of the cell array. Thus it is clear that the RRU 54 is under the centralized control of controller 16.

Alternatively, as illustrated in Fig. 4 of Sharrit, an RRU 58 can include both hardware and software programmability. That is, RRU 58 includes a GPP 60, an FPGA 62, a DSP 64 with associated RAM 66, and a multiplexer 68. RRU 58 is a hybrid unit which allows controller 16 to

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specify whether a signal currently on signal bus 14 will be processed in hardware (in FPGA 62) or in software (in DSP 64). Based on commands from controller 16, GPP 60 delivers a select signal to multiplexer 68 that directs the signal on bus 14 to the desired processing unit. Also, as indicated by the arrows, the GPP 60 configures the FPGA 62 or the DSP 64 to run certain software modules. Again, RRU 58 is under the centralized control of controller 16.

The Examiner asserts on page 2 of the Office Action that Applicant made these arguments previously, and that a response was provided in the Examiner's Answer which was affirmed by the Board of Patent Appeals and Interferences. Applicant respectfully disagrees.

In the Appeal Brief Applicant asserted that Sharrit fails to teach "a local controller … permitting the at least one kernel to operate autonomously *with respect to the other of the plurality of kernels*."

The Board's position on appeal was that that the claimed "'operate autonomously with respect to the other of the plurality of kernels' reads on any operation performed independently from the other plurality of kernels, not necessarily independently from *any* circuitry outside of the computing element, i.e., not independently of a system processor."

In view of the claim construction applied by the Board, in the last Response Applicant amended the independent claims to recite simply that the at least one kernel operates autonomously, that is, Applicant removed the qualifying language "with respect to the other of the plurality of kernels." Applicant also added dependent claims 99-101, which more definitely recite that "the local controller permits the at least one kernel to operate autonomously with respect to the other of the plurality of kernels and any other circuitry within the [processor (claim 99) / communication device (claim 100) /electronic device (claim 101)]." These claims recite that the a local controller permits the at least one kernel to operate autonomously, that is completely autonomously, not only with respect to the other of the plurality of kernels, but also with respect to any other circuitry.

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In rejecting this feature, on page 4 of the Office Action the Examiner refers Applicant to Sharrit, column 5, lines 41-43; column 6, lines 14-22; column 2, lines 35-43; column 5, lines 8-14. However, these sections do not teach that reconfigurable resource units (RRUs) 12 operate autonomously. Rather, these sections teach that the RRUs are under the centralized control of controller 16. A more detailed explanation follows.

Sharrit, in column 5, lines 41-43, which was cited by the Examiner, discusses the RRU 12 of Fig. 2 by stating that "DSP 42 is coupled to controller 16 for receiving, among other things, processing commands instructing the DSP 42 how to process a signal presently on signal bus 14. The DSP 42 then reads the signal from the signal bus 14 and processes it by executing one or more software programs stored in RAM 44." In other words, controller 16 transmits to DSP 42 of RRU 12 processing commands instructing RRU 12 how to process a signal. Thus, it is clear from this section that RRU 12 does not operate autonomously as required by the claimed invention, but is instead under the centralized control of controller 16.

Sharrit, in column 6, lines 14-22, which was also cited by the Examiner, discusses the RRU 12 of Fig. 3 by stating the following:

> GPP 48 is coupled to the controller 16 for receiving instructions on how to process a signal on bus 14. In response to the instructions, the GPP 48 delivers a control signal to FPGA 50 instructing it to read the signal on signal bus 14 and to process the signal in an appropriate area of the cell array. The GPP 48 can also receive configuration files from the controller 16 for use in reconfiguring the FPGA 50. GPP 48 then delivers the configuration files to a designated portion of FPGA 50.

In other words, controller 16 transmits to GPP 48 of RRU 12 instructions for processing a signal and configuration files for use in reconfiguring FPGA 50. Thus, it is also clear from this section that RRU 12 does not operate autonomously as required by the claimed invention, but is instead under the centralized control of controller 16.

Sharrit in column 2, lines 35-43, which was also cited by the Examiner, discloses that an RRU "can be set up to perform one set of processing functions at one moment and a different set of

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processing functions at another moment, based on current system requirements." Sharrit then immediately goes on to disclose that "To provide this ability, each of the RRUs 12a-12n includes an input port for receiving configuration information from the controller 16. The RRUs 12a-12n restructure themselves in accordance with the configuration information to provide the additional or alternative functions." In other words, controller 16 transmits to each of the RRUs configuration information, and then the RRUs restructure themselves in accordance with this configuration information. Thus, it is also clear from this section that RRUs 12 do not operate autonomously as required by the claimed invention, but are instead under the centralized control of controller 16.

Sharrit, in column 5, lines 8-14, which was also cited by the Examiner, discloses that "the controller 16 can utilize a priority system to determine which of the RRUs 12a-12n to reconfigure." In other words, the RRUs are reconfigured under the control of controller 16. Thus, it is also clear from this section that RRUs do not operate autonomously as required by the claimed invention, but are instead under the centralized control of controller 16.

It is clear from each of the sections cited by the Examiner as discussed above, that Sharrit's RRUs are under the centralized control of the controller. Sharrit's RRUs do not operate autonomously with respect to all other circuitry, as required by the claimed invention. The claims are therefore patentable over Sharrit for at least this reason.

New dependent claims 99-101 more definitively recite that the "local controller permits the at least one kernel to operate autonomously with respect to the other of the plurality of kernels and any other circuitry within the [processor (claim 99) / communication device (claim 100) /electronic device (claim 101)]," respectively. Thus these claims 99-101 further define how the at least one kernel operates autonomously.

In rejecting these dependent claims, on page 6 of the Office Action the Examiner refers Applicant not only to paragraphs cited above in rejecting the independent claims, but additionally refers Applicant to Sharrit, col. 5, lines 17-32. However, as with the sections discussed above, this section does not teach that reconfigurable resource units (RRUs) 12 operate autonomously, but

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instead teaches that RRUs 12 are under centralized control by controller 16. More specifically, this section states the following:

> During a transmit operation, information from user device 40 is delivered to signal bus 14 via user interface 28. Based on a desired transmit signal format, *controller 16 causes the information* from user device 40 *to be encoded and/or modulated in one or more of the RRUs 12a-12n* to achieve the required signal format. When processing is complete, *controller 16 causes the signal to be delivered from the plurality of RRUs 13* back to the signal bus 14, from which it is transferred to an appropriate antenna via multiplexer 20. The antenna then transfers the signal into a wireless communications channel. As before, if none of the RRUs 12a-12n are configured for processing the user information to achieve the desired signal format, the *controller 16 will reconfigure one or more of the RRUs 12a-12n* to include the required functionality.

(emphasis added.) In other words, this section discloses that controller 16 causes information to be encoded and/or modulated in the RRUs. Controller 16 then causes the signal to be delivered from the RRUs. Controller 16 also reconfigures the RRUs. Again, it is clear from this section that the RRUs are under centralized control by controller 16, and Sharrit does not teach a kernel that operates autonomously, not only with respect to other kernels, but also with respect to all other circuitry, as required by each of claims 99-101. Thus, dependent claims 99-101 are patentable over Sharrit for this additional reason.

In view of the above, it is respectfully submitted that the pending claims are patentable over Sharrit. Reconsideration and withdrawal of the prior art rejection is therefore respectfully requested.

In view of the above, Applicant believes the pending application is in condition for allowance.

In the event a fee is required or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 50-2215.

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Respectfully submitted,

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